Claims:

1. A recombinant HuEPO-L-vFc fusion protein comprising HuEPO, a peptide linker, and a human IgG Fc variant.

2. The peptide linker in claim 1 containing about 20 or fewer amino acids is present between HuEPO and the human IgG Fc variant; and the peptide linker comprises two or more amino acids selected from the group consisting of glycine, serine, alanine, and threonine.

3. The human IgG Fc variant in claim 1 or claim 2 comprising a hinge, CH2, and CH3 domains of human IgG2 with Pro331Ser mutation as SEQ ID NO: 18.

4. The human IgG Fc variant in claim 1 or claim 2 comprising a hinge, CH2, and CH3 domains of human IgG4 with Ser228Pro and Leu235Ala mutations as SEQ ID NO: 20.

5. The human IgG Fc variant in claim 1 or claim 2 comprising a hinge, CH2, and CH3 domains of human IgG1 with Leu234Val, Leu235Ala, and Pro331Ser mutations as SEQ ID NO: 22.

6. The HuEPO-L-vFc fusion protein of any of the preceding claims exhibits *in vitro* biological activity similar to or higher than that of rHuEPO on a molar basis.

7. A CHO-derived cell line producing the HuEPO-L-vFc fusion protein of any of the preceding claims in its growth medium in excess of 10 μg per million cells in a 24 hour period.

8. The CHO-derived cell line producing the HuEPO-L-vFc fusion protein of claim 7 in its growth medium in excess of 30 μg per million cells in a 24 hour period.

9. The CHO-derived cell line producing the HuEPO-L-vFc fusion protein of claim 1, wherein the human IgG Fc variant comprises a hinge, CH2, and CH3 domains of human IgG selected from the group consisting of IgG1 as SEQ ID NO: 22, IgG2 as SEQ ID NO: 18, and IgG4 as SEQ ID NO: 20, the IgG Fc contains amino acid mutations to attenuate effector functions, a flexible peptide linker containing about 20 or fewer amino acids is present between HuEPO and human IgG Fc variant, and the HuEPO-L-vFc fusion protein exhibits *in vitro* biological activity similar to or higher than that of rHuEPO on a molar basis.

10. A method for making a recombinant fusion protein comprising HuEPO, a flexible peptide linker, and a human IgG Fc variant, which method comprises: (a) generating a CHO-derived cell line; (b) growing the cell line under conditions the recombinant protein is expressed in its growth medium in excess of 10 μg per million cells in a 24 hour period; and (c) purifying the expressed protein from step (b), wherein the recombinant fusion protein exhibits *in vitro* biological activity similar to or higher than that of rHuEPO on a molar basis.

11. The method of claim 10, wherein the flexible peptide linker containing about 20 or fewer amino acids is present between HuEPO and the human IgG Fc variant; and the peptide linker comprises two or more amino acids selected from the group consisting of glycine, serine, alanine, and threonine.

12. The method of claim 10, wherein the human IgG Fc variant comprises a hinge, CH2, and CH3 domains of human IgG2 with Pro331Ser mutation.

13. The method of claim 10, wherein the human IgG Fc variant comprises a hinge, CH2, and CH3 domains of human IgG4 with Ser228Pro and Leu235Ala mutations.

14. The method of claim 10, wherein the human IgG Fc variant comprises a hinge, CH2, and CH3 domains of human IgG1 with Leu234Val, Leu235Ala, and Pro331Ser mutations as SEQ ID NO: 18.

15. The method of any claim of claims 10, 11, 12, 13, and 14, wherein step (b) is in excess of 30 μg per million cells in a 24 hour period.

16. The method of claim 10, wherein the human IgG Fc variant comprises a hinge, CH2, and CH3 domains of human IgG4 with Ser228Pro and Leu235Ala mutations as SEQ ID NO: 20.

17. The method of claim 16, wherein step (b) is in excess of 30 μg per million cells in a 24 hour period.

18. The method of claim 10, wherein the human IgG Fc variant comprises a hinge, CH2, and CH3 domains of human IgG1 with Leu234Val, Leu235Ala, and Pro331Ser mutations as SEQ ID NO: 22.

19. The method of claim 18, wherein step (b) is in excess of 30 μg per million cells in a 24 hour period.

20. A method for making a recombinant fusion protein comprising HuEPO, a flexible peptide linker, and a human IgG Fc variant, which method comprises: (a) generating a CHO-derived cell line; (b) growing the cell line under conditions the recombinant protein is expressed in its growth medium in excess of 10 μg per million cells in a 24 hour period; and (c) purifying the expressed protein from step (b), wherein the recombinant fusion protein exhibits *in vitro* biological activity similar to or higher than that of rHuEPO on a molar basis; wherein the flexible peptide linker containing about 20 or fewer amino acids is present between HuEPO and the human IgG Fc variant; and the peptide linker comprises two or more amino acids selected from the group consisting of glycine, serine, alanine, and threonine; wherein the human IgG Fc variant comprises a hinge, CH2, and CH3 domains selected from the group consisting of human IgG2 with Pro331Ser mutation as SEQ ID NO: 18, human IgG4 with Ser228Pro and Leu235Ala mutations as SEQ ID NO: 20, and human IgG1 with Leu234Val, Leu235Ala, and Pro331Ser mutations as SEQ ID NO: 22.